GOVERNMENT MEASURES TO INCREASE MINE SAFETY

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What I want to do at this late hour is to call your attention to one or two things in connection with the work the government officials are doing to bring about greater safety in the mines. In the first place, they conduct investigations in an endeavor to discover the causes of mine accidents, and thereafter to suggest remedies or preventive measures. We are prevented ourselves by law from having anything to do with the inspection of mines or industrial plants in this country. We are forbidden by legislative enactment to talk much about it. State mine inspectors exist, to whom belong the prerogative and we are glad to surrender it to them. In connection with the disaster which occurred at Scranton, Pa., yesterday, I shall, as a matter of interest, illustrate what we endeavor to do. We all recognize that the prevention of mine disasters is more important than the rescue of the injured, and yet the rescue work is also essential.

There are two modern methods which we have endeavored to develop in connection with this rescue work. In mine disasters, whether caused by fire or by explosion, the mines rapidly fill with poisonous and explosive gas. In order to rescue men, it is necessary for others to enter the mine at once. They cannot do so, breathing the ordinary atmosphere; because it does not exist there. Our men must carry their own atmosphere with them, and we have endeavored to provide such equipment for them. Now, as the miner enters the mine he wears a helmet, and he carries with him his oxygen, contained in an iron bottle behind him, an oxygen supply lasting two hours, also a quantity of caustic potash, which will last for two hours, and these are the only two things which he needs to carry on the work. The oxygen, which is under great pressure, has the pressure relieved, passes through a tube, enters through the tube attached underneath the helmet and goes direct to the man's breathing outfit. When he breathes out, the air is impure, as it

contains carbon dioxide and moisture. This air goes down and passes in the rear and then goes up through the potash, and the effect is to take out of this impure air the carbonic acid gas and the surplus moisture, and the remaining oxygen, together with the nitrogen, continues to circulate through the system. The helmet wearer never breathes pure oxygen, but continues to breathe over again the original supply of nitrogen, and that lasts two hours.

A sad accident occurred to one of our rescuers, which we do not understand, but was probably due to leaking on the side of the helmet, which allowed the poisonous gases to enter. The helmet is lined on the inside with wire and rubber cushions, and this is designed to fit the irregularities of the face, and prevent the poisonous air from forcing its way through. It is quite possible in the excitement that the man forgot to tighten the helmet sufficiently. He was a man not long in training, but conscious of his duty, and his only hope of reward was a letter from the Government to his family.

Each member of a rescue party carries with him a safety lamp, which will detect the poisonous gases, a lamp which will not explode and which goes out when the gases become so rich as to make it impossible to burn without the ordinary supply of oxygen. He carries with him also a lamp which will answer the purpose whatever the nature of the gases. With these two lamps, and helmet equipment which he carries on his back he can carry any other implements needed in connection with rescue work.

He goes into the mine, and suppose he finds a man. The purpose then is to rescue the man. The only possibility of rescuing the man is to get oxygen into his lungs, and the poisonous gases out, and for that we have a rather remarkable machine an oxygen reviving apparatus which we regard as important as the helmet. The rescuer releases the pressure of the oxygen in this apparatus and turns the oxygen into the lungs of the miner. When the lungs have been filled and the machine is reversed, which is usually done automatically, it pumps the air out of the lungs and later pumps oxygen in, and so that machine, which moves as rapidly as thought, fills and empties, and does so in just about the right regularity in bringing about the breathing of the body. We have revived men so thoroughly overcome with poisonous gases, that they had no pulse or breathing, when the body is so warm as to make reviving possible.

With these two simple propositions the work so far goes on.

We have six crews of trained miners constantly going from one camp to another to train miners, and to encourage miners to carry on the work themselves. In the past two years, since this work was begun, more than 600 rescue outfits have been supplied to the proprietors of the mines; and I want to say that we find the mine owner in sympathy with this work, and that he does everything he finds possible to do as a mine owner. This is encouraging for the future. For three years preceding this, the death rate increased 33 per cent; during the three years following it has decreased 30 per cent. If we can keep up that decrease a few years we will have the United States as creditable in this respect as in the great industrial development of the country.